

ABSTRACT

A glass-ceramic rare earth doped fiber comprises a plurality of crystallites, wherein at least 90% of the rare earth dopant is situated within said crystallites. The stimulated emission and absorption line shapes of the rare earth doped glass-ceramic fiber is narrower than that stimulated emission and absorption line shapes of the precursor rare earth doped glass. This is indication of the reduction in the inhomogenous broadening of glass-ceramic fibers compared to glass fibers. An embodiment of an optical amplifier includes: an input port; a length of glass-ceramic rare earth doped fiber, the glass-ceramic fiber being operatively coupled to the input port and including a plurality of crystallites; at least one optical pump coupled to this glass-ceramic fiber; an output port providing an amplified optical signal; and at least one optical component situated between the input port and the output port.